Snagboot:
vendor-agnostic board flashing & recovery

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Working system
The board has a running system. We want to change something, e.g. the kernel

Working bootloader
If we have a working bootloader, flashing our new system/component usually won't be an issue.

U-Boot

Image source

Brick?
If we do not have a working bootloader, things get more complicated

"Traditional" recovery method
Flash the new system on an SD card and get the ROM code to boot from it This method has a couple of downsides:

▶ Repetitive SD card handling

▶ Some boards do not have an SD card slot

▶ We might want to directly flash something else than the SD card e.g. in a factory flashing scenario

▶ Requires manipulating the board often -> higher risk of ESD

Most ROM codes support a USB recovery mode
In this mode, the CPU listens for commands sent over the serial link Those recovery protocols usually provide:

▶ fixed-size reads from SoC memory

▶ fixed-size writes to SoC memory

▶ variable-size reads and writes (file transfers)
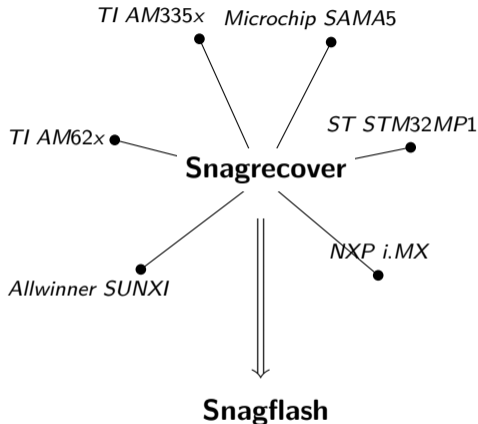
▶ a "run" command

Snagboot!

- ▶ An open-source Bootlin project, released in 2023 under GPLv2
- ▶ Can recover SoCs from six different families (for now...)
- ▶ Split into a recovery tool and a flashing tool

Source:
https://github.com/bootlin/snagboot

TI AM335x *Microchip SAMA5*

TI AM62x **Snagrecover** *ST STM32MP1*

NXP i.MX

Allwinner SUNXI

Snagflash

DFU | Fastboot | UMS

Firmware configuration

fw.yaml

```
tf-a:
  path: /path/to/tf-a-stm32mp157c-dk2.stm32

fip:
  path: /path/to/fip.bin
```

$ snagrecover -s am335x -f fw.yaml

$ snagflash -P fastboot -p 0000:1234 -f download:boot.img -f flash:0;1 -f boot

$ snagflash -P dfu -p 000:1234 -D 0:boot.img

$ snagflash -P ums -s boot.img -b /dev/sdb1

$ snagflash -P ums -s u-boot.img -d /mnt/

Contributions

☐ ⇅ **0 Open** ✓ **18 Closed**

Author ▾   Label ▾   Projects ▾   Milestones ▾   Reviews ▾   Assignee ▾   Sort ▾

☐ ⅄ **snagrecover: imx: add support for i.MX53**   💬 7
     #28 by mfuzzey was merged 2 weeks ago • Changes requested

☐ ⅄ **docs: fix minor path mistake**   🟣   💬 1
     #27 by Tropicao was merged on Jul 25

☐ ⅃⅃ **snagrecover: udev: add STM32MP1 Fastboot device missing rule**   💬 3
     #26 by AdrianDC was closed on Jul 28

☐ ⅄ **snagflash: dfu: add `--dfu-keep`, `--dfu-detach` and `--dfu-reset` to manage DFU mode**   💬 7
     #25 by AdrianDC was merged on Jul 24 • Changes requested

☐ ⅄ **Am62ax support**   💬 2
     #24 by kv-swetha was merged on Jul 20 • Changes requested

☐ ⅄ **snagrecover: imx8qxp: add to list of SDPV SoCs**   💬 2
     #23 by aleeraser was merged on Jul 19

What the future holds

Current roadmap for Snagboot

▶ Improve fastboot support in Snagflash

▶ Test snagrecover on more untested SoCs

▶ Spread the word so that more SoC support can be added

And of course...

▶ ...keep on maintaining!

Questions? Suggestions? Comments?

We're hiring!
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